



## **OSCS Corn Sub-Committee to the Cereals Advisory Committee**

*November 2, 2023*

### ***Meeting Minutes***

#### **In Attendance:**

Brian Haverkamp, Corteva

Trevor Patterson, Corteva

Jeremy Johnson, Corteva

Blair Britten, Bayer

Skyler Hager, Syngenta

Andrew Altishin, OSCS

Tami Brown, OSCS

Craig Agidius (Secretary), OSCS

The meeting was called to order at 9:30 AM via Zoom.

#### **Tasks**

1) Approve the 2022 Corn Subcommittee minutes

Craig reviewed the committee minutes from the previous year. Minutes from the 2022 meeting, as provided via email, were approved.

2) Approve the 2023 meeting agenda

No additions or amendments were made.

3) Review 2022 CAC meeting minutes

Craig briefly reviewed the CAC minutes from the previous year. No items from the 2022 meeting pertained to corn.

4) Certification News      Appendix 1

Andy provided a brief overview of the certified acres (various crops) for the 2023 season showing a trend of decreased acres in comparison to the previous year noting that the majority of the drop was related to grass seed acres. With the current market and a strong US dollar, Andy shared that he expects acres to be down another year before they level out and start to rise back up in following years. The 2023 certified acres can be viewed on the OSCS website <https://seedcert.oregonstate.edu/committees-and-publications>. He also provided an update regarding internal changes for OSCS staff regarding upcoming retirements. He briefly shared that OSCS has struggled with employees for the last 4 to 5 years mainly referring to the corn program. Andy mentioned making changes to seasonal employee wages in addition to providing state issued vehicles for use in the corn program. He noted that it has helped increase the number of applicants in addition to retaining employees that are hired throughout the season.

## Oregon Seed Certification Services

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### 5) Review of 2023 Corn Certification Activities Appendix 2

Craig provided an overview of total acres for 2023 certified corn: number of contractors, number of corn fields, number of fields that were foundation class, and number of fields that were certified class. He reviewed hiring/training staff for temp corn inspectors. Craig also shared that he was fortunate to secure five temp inspector positions; 2 for the Milton-Freewater and 3 for the Hermiston/Boardman area. He noted that there was a shift in the number of applicants than in previous seasons due to the ability to provide state issued vehicles. He briefly described how the field inspection process works and the OSCS protocol. Lastly, he touched on the seed movement category.

### 6) Discussion of 2023 inspection season, concerns, and comments Appendix 3

Brian opened a discussion around sterile parent certification noting that there were concerns with interpreting the current rules in the Corn Standards Handbook. He mentioned discussing the potential for some wording changes regarding male sterile inbreds. A few members briefly went over the definition of a male sterile and that it could also be referred to as a female sterile. Jeremy gave more context regarding the intended outcome for the wording change. He shared that adding allowance in the standards for a current genetic plant environment interaction where there may be a partial restoration for a Foundation increase would be ideal. He informed the group that a sterile line increased and successfully executed would have plants that would be on-type. Due to the genetic environment interaction, there may be a release of some stick anthers that may not contain pollen or a limited number of anthers present that do release pollen. He noted that for this scenario the plant would be on-type. In addition, he stated that the proposal going forward would be to edit the line item to make it appropriate for that of foundation increase of a sterile line and for the allowance of some amount of pollen shed but stated that the plants that are shedding need to be on-type. He also proposed to refine the definition of a shedding tassel to be in the context of sterile line foundation seed increase. Skyler agreed with Jeremy. Jeremy stated that Corteva is prepared to provide wording changes to meet these specifications as shared for review. Andy and members of the committee briefly discussed methods in how to move forward in implementing word changes to these standards. A motion was made to develop a sub-committee to discuss proposed wording changes for item D numbers 3 and 4 on page 8 and the definition of a shedding tassel on page 10. It was offered to the group to join the sub-committee to aid in wording changes or that Corteva would move forward with the initial proposal and solicit feedback after the wording proposal is drafted. Skyler volunteered to work with Corteva on the proposal. The motion was seconded and passed unanimously.

An email chain was created for the members of the Sub-Committee to share proposed Standard changes with one another and collectively come up with a draft of those changes. Corteva shared a draft of the Corn Standard changes they would like to make surrounding male sterile inbreds via email. Those standard changes were then reviewed by multiple committee members at a second meeting that took place on 01/12/2024 via Zoom. OSCS asked a few questions to clarify some of the item changes. A motion was made to accept the changes as presented. The motion was seconded and passed unanimously.

### 7) Call for other business

No calls for other business.

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### 8) Nominate a committee member to attend the 2023 CAC meeting

Corteva representative, *Brian Haverkamp* volunteered to attend the 2023 CAC meeting. Brian agreed to attend the meeting on November 6<sup>th</sup>, 2023 via Zoom to represent this subcommittee.

This meeting adjourned at 10:20 AM

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### Action Items for the Cereals Advisory Committee

#### 2023 Corn Advisory Sub-Committee

1. Update and add verbiage to the Corn Standards Handbook surrounding male sterile inbreds and how to address the presence of visible pollen on male sterile plants during field inspections.



**Andrew Altishin**

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## 2023 Year in Review

**Total Acres Certified of all Crops – 201,546 (-6.5%)**

Total Acres of Grass Crops Certified – 160,954 (-9.7%)

Total Acres of Small Grains Certified – 21,943 (3.2%)

Total Acres of Legumes Certified – 4,196 (-18.5%)

Total Acres of Misc. Other Crops Certified – 14,453 (34.9%)

Total Acres of Potatoes Certified – 3,277 (6.3%)

Total Acres of PVG Certified – 155 (44.9%)

Total Hemp Fields Inspected – 0

**Total Acres of Corn – 2,649 (-6.2%)**

### Updates

- Jeff Mc Morran retiring
- Chris Wallace retiring
- Brenda Allison – Yamhill, Polk and Washington Co. sampler
- Karen Courtney – Union/Umatilla sampler
- Open Position
  - o Programmer/Analyst

### OSCS Staffing

- 3 Administrative staff
- 2 Information Technology Staff
- 6 Seed Certification Specialists
- 3 Part-time/seasonal Seed Certification Specialists
- 6 Seed Certification Samplers
- 1 Manager and Seed Certification Specialist
- Various part-time student employees (office and potato greenhouse)



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## Corn Program Overview

### Program Year: 2023

- 2,649 Total Acres (6.2% decrease from 2022)
- 3 Growers
- 259 Oregon Fields (7.5% decrease from 2022)
- 243 Foundation Class (4.7% decrease from 2022)
- 16 Certified Class (36% decrease from 2022)

### Hiring/Training of Staff

- Average field assignments range 50-60 fields/inspector for the season
- 5 inspectors – 2 in Milton-Freewater, 3 in Hermiston/Boardman
- Hire local employees – knowledge of area
- State issued vehicles provided
- Training workshop/meeting mid-June
  - In-field training continues when season begins July 1
  - Training continues as needed through the summer

### Field Inspections

- Each field is inspected at least 4 times
- One isolation inspection prior to pollination (locate field, purity of plant type, contamination checks), and a minimum of 3 inspections during pollination
- Acreage determines number of counts per inspection (1 count = 50 plants; 50 m/f if Hybrid)
- Counts performed at three increments of silk presence during pollination (5-15%, 16-65%, >66%)
- Intensive timing; time between inspections can greatly vary due to variety, weather/field conditions, and inputs but averages one inspection every 2-3 days.
- Field information is available online to ensure all fields are signed up and confirm they have been inspected

### Seed Movement

- Ear inspections are required for Foundation corn single crosses and inbred lines (inspect corn ears for off-colored or different textured kernels)
- Starts end-August going through end-October – 6 days a week
- Transfers Pending Final Certification are required to maintain certification; use eCertification site to print transfers

- a. Completely destroying or detasseling the necessary contaminating corn before silks appear in the seed parent of the certified field.
  - b. By disqualifying from certification (and clearly marking) the crossing blocks improperly isolated from contaminating corn, before the final field inspection.
- 6) Off-type and Volunteer plants
- a. Plants showing definite hybrid vigor or a definitely different phenotype from the parent being inspected shall be classified as definitely off-type.
  - b. Definitely off-type plants must be completely destroyed so that suckers will not develop.
  - c. An isolation in which more than 0.1% (1 per 1000) of definitely off-type plants in the pollen or seed parent, have shed pollen at a time when more than 5% of the seed parent plants have apparently receptive silks shall be disqualified from certification.
  - d. An isolation in which more than 0.1% (1 per 1000) of definitely off-type plants are present in the seed parent at the final inspection shall be disqualified from certification.
- D. Detasseling and pollen control
- The following applies when 5% or more of the seed parent plants within an isolation have apparently receptive silks<sup>1</sup>:
- 1) A field shall be disqualified from certification if at any one inspection more than 1% of the seed parent plants have shed pollen, or if the total number that have shed pollen for any three inspections on different dates exceeds 2%.
  - 2) When more than one hybrid combination is being grown in the same isolation and the seed parent of one or more of the hybrids is shedding pollen in excess of 1%, then all seed parents that have 5% or more apparently receptive silks at the time will be disqualified unless adequately isolated from the shedding seed parent.
  - 3) Any tassel or portion of tassel shall be counted as shedding pollen when two inches or more of the central stem or the side branches or a combination of the two have the anthers extended from the glumes and visible pollen emitting. Shedding tassels measuring less than 2" shall be counted as 1/5 of one tassel.
  - 4) The detasseling (cutting or pulling) of cytoplasmic male sterile seed parent is permitted.

### Seed Sampling and Purity Testing

- A. OSCS may use post-control genetic purity testing to determine certification eligibility of any seed lot. Sampling will be performed by an OSCS representative and submitted to a designated testing lab approved by OSCS. Fees associated with additional testing will be paid by applicant.
- B. All certified seed must be sampled and submitted to a designated certification authority for quality testing before final certification and labeling.

## FOUNDATION CORN

### Seed Class Requirements (Single Cross)

- A. Only the Foundation class is recognized for seed of such single crosses, backcrosses, and male sterile inbreds produced according to these standards.
- B. Foundation single cross corn seed shall mean "seed to be planted for the production of certified quality hybrid corn seed." It shall consist of the first generation of a cross of any one of the following:
  - 1) Two inbred lines.
  - 2) An inbred line and a Foundation backcross.

<sup>1</sup> Apparently receptive = emerged but not wilted or brown

- 3) Two Foundation backcrosses.
- C. Foundation backcrosses shall be either of the following:
- 1) A first generation Foundation backcross is the first generation cross between a foundation single cross of related inbred lines and an inbred line which is the same as one of the inbreds in the Foundation single cross.
  - 2) A second-generation Foundation backcross is made by using a first generation backcross as the seed parent; the pollen parent is an inbred line. The inbred line is the same as the inbred parent used in making the first generation backcross seed parent.
- D. Additional requirements for Male Sterile Lines:
- 1) A male sterile inbred line may be substituted for its fertile counterpart as one parent of a Foundation single cross provided: a) the male sterile line has been backcrossed for not less than five generations to its fertile counterpart-evidence of use of genetic markers may be used to reduce this time, and b) the male sterile line is the same in all other characteristics as its fertile counterpart.
  - 2) Male sterile inbred lines propagated by hand pollination shall be eligible for certification.
- E. Additional requirements for Pollen-Restoring Lines:  
A pollen-restoring line may be substituted for its non-restoring counterpart in a Foundation single cross, provided the pollen-restoring line is the same in other characteristics as its non-restoring counterpart.

### Seed Class Requirements

#### (Inbred)

- A. Only the Foundation class is recognized for seed of eligible inbreds produced according to these standards. For the purpose of certification, the propagation of male sterile inbred lines shall be subject to the same requirements and standards as Foundation Single Crosses **unless otherwise noted.**
- B. Foundation inbred corn seed shall mean "seed to be planted for the production of Foundation single cross seed or Certified quality hybrid corn seed."
- C. An inbred line to be considered for certification shall be a relatively true breeding strain resulting from controlled self-fertilization, or backcrossing to a recurrent parent with selection or its equivalent.
- D. Addition of Specific Genetic Factors to a line
- 1) When a specific genetic factor is added to an inbred line, the line shall be backcrossed to its recurrent parent at least five generations. The line shall be homozygous for the specific genetic factor except for the pollen restoration factor and the <sup>†</sup>Genic Male Sterile maintainer line.
  - 2) For a recovered pollen restorer inbred line, selection shall be relative to a specific cytoplasmic male sterile source.
  - 3) The originator shall supply proof of the genetic nature of a recovered line.
  - 4) A <sup>†</sup>Genic Male Sterile maintainer line, consisting of duplicate-deficient and male-steriles in an approximate 1:1 ratio, shall be no more than two generations removed from Breeder seed. The maintainer shall be designated according to generation as one of the following:
    - a. Breeder seed: the hand-pollinated selfed seed from a known duplicate-deficient plant heterozygous at a particular male sterile locus.
    - b. Foundation I seed: the product of random-mating among fertile plants arising from Breeder seed.
    - c. Foundation II seed: The product of random-mating among fertile plants arising from Foundation I seed.
  - 5) A <sup>†</sup>Genic Male Sterile line shall be a strain homozygous for a particular male sterile recessive allele.
  - 6) The <sup>†</sup>Genic Male Sterile lines shall be identified as to the recessive genes they carry. The



- 1) Plants showing definite hybrid vigor or a definitely different phenotype from the parent being inspected shall be classified as definitely off-type<sup>‡</sup>.
- 2) Male Sterile<sup>†</sup> inbreds – Otherwise apparent on-type cytoplasmic male sterile<sup>†</sup> seed parent plants that exhibit cytoplasmic male-sterile<sup>†</sup> characteristics (plants that do not develop viable pollen or a portion of the tassel of open glumes, with anthers extended, and visible pollen emitting) shall not be considered “definitely off-types<sup>‡</sup>”.
- 3) Definitely off-type<sup>‡</sup> plants must be completely destroyed so that suckers will not develop.
- 4) An isolation in which more than 0.1% (1 per 1000) of definitely off-type plants in the pollen or seed parent, have shed pollen at a time when more than 5% of the seed parent plants have apparently receptive silks shall be disqualified from certification.
- 5) An isolation in which more than 0.1% (1 per 1000) of definitely off-type plants are present in the seed parent at the final inspection shall be disqualified from certification.

#### D. Detasseling and Pollen Control

When 5% or more of the seed parent plants within an isolation have receptive silks:

- 1) A field of a specific Foundation single cross shall be disqualified from certification if at any one inspection more than 0.5% of the seed parent plants have shed pollen or if the total number having shed pollen for any three inspections exceeds .75%.
- 2) Male Sterile Inbreds: A field of a specific Foundation cytoplasmic male sterile inbred propagation shall be considered for certification having the presence of shedding tassels that exhibit otherwise apparent on-type cytoplasmic male-sterile<sup>†</sup> characteristics (plants that do not develop viable pollen or a portion of the tassel of open glumes, with anthers extended, and visible pollen emitting) in the male sterile rows.
- 3) When more than one Foundation single cross is being grown in the same isolation and the seed parent of one or more of them is shedding pollen in excess of 0.1%, all seed parents having 5% or more apparently receptive silks at the time will be disqualified unless adequately isolated from the shedding seed parent.
- 4) Male sterile inbreds - Any definitely off-type<sup>‡</sup> plant in male sterile rows shall be completely destroyed by the applicant to eliminate the possibility of its producing seed. Detasseling male sterile rows shall not be acceptable to control definitely off-type<sup>‡</sup> plants shedding pollen in either cytoplasmic male sterile single cross or inbred line propagation. Detasseling male sterile rows shall be acceptable to control cytoplasmic male-sterile<sup>†</sup> plants shedding pollen in cytoplasmic male sterile foundation single crosses.
- 5) Any tassel or portion of tassel shall be counted as a shedding tassel when two inches or more of the central stem, or the side branches, or a combination of the two have the anthers extended from the glumes and visible pollen emitting.

#### Bin Inspections

A corn ear inspection is required on Foundation level materials. Applicants must notify OSCS of an estimated bin inspection start date, and request an inspection for each lot intended for certification. Seed that is ear-inspected after maturity shall not contain in excess of 0.1% (1 per 1000) of definitely off-type ears or more than 0.5% (5 per 1000) of ears with kernels of different color or endosperm type which would not exceed a total of twenty-five kernels per 1000 ears.

## Definitions

**Double Cross (Hybrid):** The first generation hybrid between two single crosses.

**Foundation Single Cross:** A single cross used in the production of a double cross, three-way cross or a top cross.

**Inbred Line:** A relatively true-breeding strain resulting from at least five successive generations of controlled self-fertilization or of backcrossing to a recurrent parent with selection, or its equivalent, for specific characteristics.

**Open-Pollination:** Pollination that occurs naturally as opposed to controlled pollination (detasseling, cytoplasmic male sterility, self-incompatibility or similar processes).

**Single Cross:** The first generation hybrid between two inbred lines.

**Top Cross:** The first generation hybrid of a cross between an inbred line and an open-pollinated variety or the first generation hybrid between a single cross and an open-pollinated variety.

**Three-Way Cross:** A first generation hybrid between a single cross and an inbred line.

**Closed Field:** When the silk percent is at or above 60% the field is defined as closed.

**Open Field:** The first inspection where the female silk is at or greater than 5%.

**Trace Silk:** Less than 5% silk emergence in the field. The field is not open at this time.

**Female Parent or Seed Parent:** The seed-producing parent that is harvested.

**Male Parent:** Pollen-producing rows.

**†Male Sterile:** Inbred lines that do not develop viable pollen or a portion of the tassel of open glumes, with anthers extended, and visible pollen emitting. Cytoplasmic Male Sterile inbred lines are environmentally sensitive and may demonstrate male fertility reversion in certain environmental situations. Also called “female” or “seed parent”.

**Detasseling:** The act of removing the tassel from the corn plant, a.k.a. emasculation, before pollen shed.

**Nick:** Pollen shed and silk emergence at the same time in the field. OECD requires adequate pollen in the field when silks are present.

**‡Definitely Off-Type (Rogue):** Any plant showing definite hybrid vigor or a definitely different phenotype not true to type for the parent planted in a given row. A pollinating parent in a sterile male row is only considered a definite off-type when it is not true to type of the male sterile seed parent and male sterile maintainer.

**Receptive Silks:** Silks emerging from the ear which are not wilted or brown.

**Roguing:** The act of removing off-types from the field. Roguing is acceptable if done before pollen shed.

**Shedding Tassel:** Any portion of the tassel that has two inches or more of the central stem, or the side branches, or a combination of the two, have the anthers extended from the glumes and visible pollen emitting. Also called “Shedding Pollen”.

**Volunteer Corn:** Plants of corn growing from the previous crop year.